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IS 10016-5 (1981): Methods of test for polybutadiene rubbers, Part 5: Determination of gel content [PCD 13: Rubber and Rubber Products]



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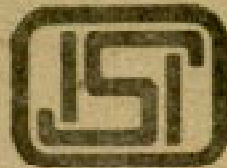
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Indian Standard

METHODS OF TEST FOR
POLYBUTADIENE RUBBERS

PART V DETERMINATION OF GEL CONTENT

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*Indian Standard*METHODS OF TEST FOR
POLYBUTADIENE RUBBERS

PART V DETERMINATION OF GEL CONTENT

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*Indian Standard*METHODS OF TEST FOR
POLYBUTADIENE RUBBERS

PART V DETERMINATION OF GEL CONTENT

0. FOREWORD

0.1 This Indian Standard (Part V) adopted by the Indian Standards Institution on 10 December 1981, after the draft finalized by the Rubber Sectional Committee had been approved by the Petroleum Coal and Related Products Division Council.

0.2 Percent gel is a measure of the percentage of insoluble rubber in the solvent. Variations from a normal level indicate changes in the polymerization system.

0.3 In this series, methods of test for polybutadiene rubbers are given. Test methods for the following characteristics are similar to those for styrene butadiene rubbers and the methods indicated below shall be used in these cases:

Volatile matter	SBR : 1 of IS : 4518 (Part I)-1967*;
Mooney viscosity	SBR : 2 of IS : 4518 (Part I)-1967*;
Solvent extract	SBR : 9 of IS : 4518 (Part II)-1971†; and
Oil content	SBR : 10 of IS : 4518 (Part II)-1971‡.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960‡. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This method of test is suitable for the determination of gel content of polybutadiene rubbers.

*Methods of tests for styrenebutadiene rubbers, Part I.

†Methods of tests for styrenebutadiene rubbers, Part II.

‡Rules for rounding off numerical values (revised).

2. QUALITY OF REAGENTS

2.1 Unless specified otherwise, pure chemicals and distilled water (IS : 1070-1977*) shall be employed in the tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the result of analysis.

3. REAGENTS

3.1 Toluene

3.2 Phenyl Beta-Naphthylamine

4. PROCEDURE

4.1 Take 100 ml of toluene in a clean and dry glass beaker. Mix 0.05 g of phenyl *beta*-naphthylamine to it. Make a thin sheet (1 to 2 mm) of the rubber taken in accordance with IS : 10016 (Part I) - 1981† by single pass through the cold roller. Cut it into small chips and add 0.4 g of it to toluene solution without mechanical stirring. Allow the vessel to stand for 48 h in the dark at room temperature. Next, filter the solution through a clean and dried-to-constant-mass stainless steel 180 micron IS sieve.

4.2 Rinse the sieve two times with 100 ml each time of the aliquot. Then dry the sieve at 120°C for 45 min and weigh. The percentage of mass of the residue left on the sieve is the gel content of the rubber tested.

*Specification for water for general laboratory use (*second revision*).

†Methods of test for polybutadiene rubbers : Part I Method of taking out test portion from sample bales.

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